

# EXHIBIT A



207 775 8755 Tel  
207 761 8020 Fax

dan.boxer@fairchildsemi.com

Fairchild Semiconductor  
333 Western Avenue  
South Portland, ME 04106

Daniel E. Boxer  
Executive Vice President  
General Counsel  
Chief Administrative Officer

BY FEDEX

Babak Sani, Esq.  
Townsend, Townsend & Crew  
Two Embarcadero Center, 8<sup>th</sup> Floor  
San Francisco, CA 94111

Re: Invention Disclosure entitled:  
*Flip Chip Attach and Copper Gllp Attach on MOSFET Devices*  
Inventors: Maria Cristine B. Estacio, Maria Clemens Y. Quinones  
Our Reference No.: 17732-1394

Dear Babak:

Enclosed is the above entitled invention disclosure for drafting into a patent application. Feel free to contact the inventors directly, but make sure that you copy me on any e-mails or written correspondence with a copy also to Chris Caseiro at Pierce Atwood.

I have committed to our management and patent committee that all patent applications will be promptly prosecuted. To this end, if you can't make contact in two weeks and expeditiously pursue the application, please let me know as soon as possible.

Thanks for your assistance.

Best regards,

A handwritten signature in dark ink, appearing to read "Dan Boxer".

Daniel E. Boxer

cc: Maria Cristine B. Estacio  
Maria Clemens Y. Quinones  
Consuelo Tangpuz  
Steve Sapp  
Chris Caseiro, Esq.

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## Invention Disclosure

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### General Information Concerning the Invention

Title of invention: *Flip Chip Attach and Copper Clip attach on MOSFET devices*

Brief description of the invention: *The objective of the invention is to define an assembly process that will meet very low package resistance (RDSon) for MOSFET devices on any given surface-mount discrete package with superior thermal performance and which can be manufactured on a high-volume environment. The invention combines the flip chip attach and copper clip attach approach in one. The bumped die is flipchip attached on the leadframe for source and gate connection while the drain connection is taken care of by the clip soldered on the die backside. This new packaging concept can lower the overall package resistance significantly as the design can now cater to bigger die sizes and thinner dice up to 4 mils with more reliable connections. The final part will still have the same size and footprint as the standard package.*

*Below details the assembly process flow:*

*Wafer Saw*  
|  
*Flipchip attach (See Figure 1, steps 1 & 2)*  
|  
*Clipbonding (See Figure 1, steps 3 & 4)*  
|  
*Encapsulation*  
|  
*Degate / Debar / Deflash*  
|  
*Marking*  
|  
*Solder Plating*  
|

*Trim & Form*

*Test/ Pack*

*Construction Details: (Refer to Figure 1)*

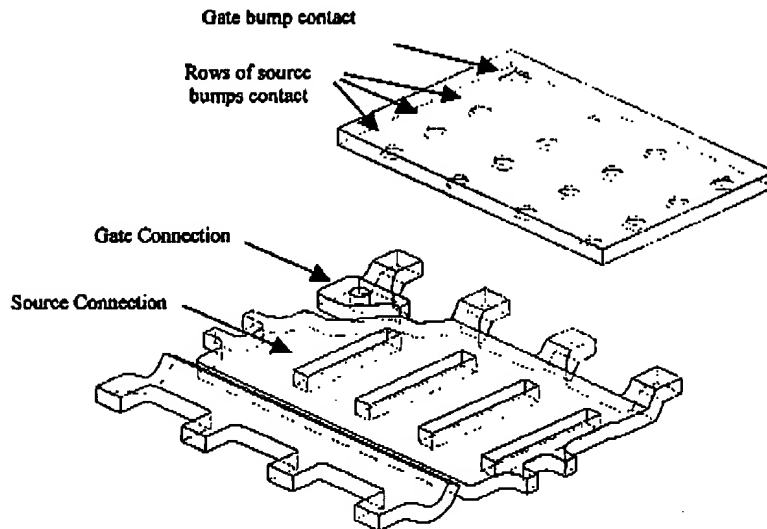
*Attach photocopies of all pertinent documentation. Each page must be signed, dated, and witnessed by two other persons who have read and understood the description of the invention.*

**FIGURE 1 . Process Flow**

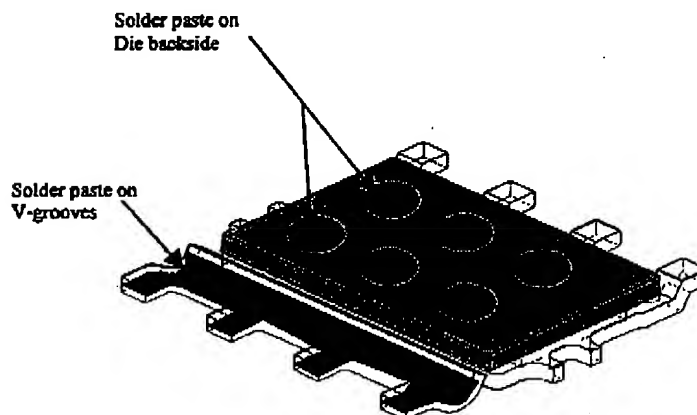
**Option 1. One time reflow of the bumps and copper clip**

**Option 2. Reflow after flipchip attach, then another reflow after clip attach**

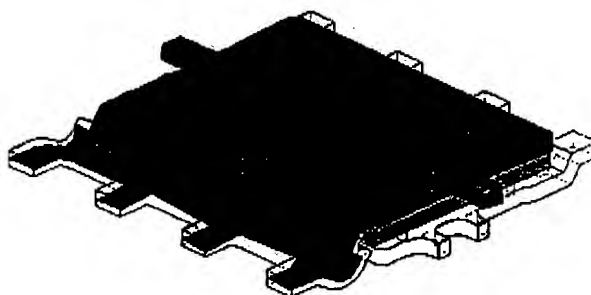
**Step 1. Bumped die from the wafer on a sawn tape is flipchip attached on the gate and source frame (flux application could either be through bump dipping or flux dispensing on the gate/source frame):**



**Step 2: Dispensing of the solder paste on the die backside and the V-grooves:**



**Step 3. Pick-and-place of the copper clip (supplied in reel form) unto the die backside and v-grooves**



**Step 4. Reflow to solder the bumps on the gate/source frame and at the same time, solder Copper clip to the die backside and the v-groove for the drain connection.**